



Department of Energy
Idaho Operations Office
1955 Fremont Avenue
Idaho Falls, Idaho 83401-1563

May 13, 2004

Mr. Nicholas Ceto, INEEL Project Manager
U.S. Environmental Protection Agency
Region X
712 Swift Blvd., Suite 5
Richland, WA 99352

Mr. Daryl F. Koch, Acting Remediation Manager
Waste Management and Remediation Division
Idaho Department of Environmental Quality
1410 North Hilton
Boise, Idaho 83706-1255

**SUBJECT: DISCUSSION OF VERIFICATION SAMPLING FOR ARSENIC AND
THALLIUM IN TEST AREA NORTH WASTE AREA GROUP-1 (EM-ER-04-102)**

Dear Mr. Ceto & Mr. Koch:

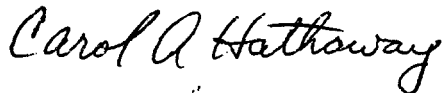
The purpose of this communication is to document the results of previous discussions held with the IDEQ and EPA regarding arsenic and thallium concentrations in the subject waste stream and the corresponding Waste Acceptance Criteria (WAC) and verification sample requirements. Sample results for the TAN WAG-1 TSF-09, -18, and -21 areas were in the range requiring 59 verification samples per lot for 3 lots, resulting in 177 samples total. During subsequent discussions with IDEQ and EPA, WAG 1 personnel provided detailed utility drawings and information on previous sampling events conducted in these areas. Additionally, research was conducted on the ICDF Landfill WAC original design inventory basis calculations for these constituents. Based upon the calculations, the concentration guide for thallium will be exceeded but the risk derived mass limit will not. The corresponding table is included as an attachment.

The current mass limits in the ICDF Landfill WAC have been shown to be risk protective. A major revision to the ICDF Landfill WAC is planned, but in the interim, it is proposed to increase the concentration guidelines for thallium and arsenic without increasing the mass limit. Retaining the mass limit for these constituents until a comprehensive risk assessment of the entire revised WAC can be accomplished ensures that the WAC remains risk protective in the interim. These actions will allow a reduced number of verification samples (2 per lot) to be taken for this waste stream and still be protective of the ICDF facility, human health and the environment.

The planning for the excavation of the V-tanks and surrounding soils is near completion. The maximum predicted volume of soils to be excavated in the V-tanks area for disposal is approximately 13,000 yd³. If we also assume a maximum soil density of about 1.72 g/cc and use the 95% UCL, the V-tanks soil remediation project could theoretically produce about 523 kg of thallium. This would utilize about 16% of the currently approved ICDF mass limit for thallium. However, the best estimate for actual amount of soil to be excavated is about 1/3 of the maximum value or about 5% of the ICDF mass limit for thallium. The same type of calculations for arsenic show that even at maximum excavation volume, the V-tanks soils would constitute less than 1% of the currently approved mass limit.

If you have any questions or need further information please contact me at 208-526-4049.

Sincerely,



Carol A. Hathaway
Environmental Protection Specialist
Environmental Restoration Program

Cc/enc: D. Einan, EPA, Richland, WA 98101
M. Spomer, IDHW DEQ

Original data excerpted from EDF-ER-264 ICDF Design Inventory -- Additional calculations added to show effect of presuming background concentrations

Table C-1

| Remediation Site | Mass (kg) | Arsenic background concentration = 5.8 mg/kg | | | | Thallium background concentration = 0.43 mg/kg | | | |
|------------------|-------------|--|-------------------------------|---|--|--|--------------------------------|--|---|
| | | Arsenic reported conc. mg/kg | Arsenic Design Mass w/o bkgnd | Arsenic background conc. used where data not reported | Arsenic Design mass including background | Thallium reported conc. mg/kg | Thallium Design Mass w/o bkgnd | Thallium background conc. used where data not reported | Thallium Design mass including background |
| ARA-01 | 2,731,754 | | 0.00 | 5.8 | 15.84 | | 0.00 | 0.43 | 1.17 |
| ARA-12 | 2,254,672 | 16 | 36.07 | 16 | 36.07 | 0.24 | 0.54 | 0.24 | 0.54 |
| ARA-23 | 53,327,688 | | 0.00 | 5.8 | 309.30 | | 0.00 | 0.43 | 22.93 |
| ARA-25 | 80,966 | 41 | 3.32 | 41 | 3.32 | 0 | 0.00 | 0 | 0.00 |
| BORAX-01 | 12,741,304 | 14 | 178.38 | 14 | 178.38 | 7.1 | 90.46 | 7.1 | 90.46 |
| BORAX-08 | 190,235 | 9 | 1.71 | 9 | 1.71 | 0.33 | 0.06 | 0.33 | 0.06 |
| CFA-04 | 9,561,781 | 8.9 | 85.10 | 8.9 | 85.10 | 0.31 | 2.96 | 0.31 | 2.96 |
| CPP-01/04/05 | 4,885,504 | | 0.00 | 5.8 | 28.34 | | 0.00 | 0.43 | 2.10 |
| CPP-03 | 12,546,342 | | 0.00 | 5.8 | 72.77 | | 0.00 | 0.43 | 5.39 |
| CPP-08/09 | 3,555,179 | | 0.00 | 5.8 | 20.62 | | 0.00 | 0.43 | 1.53 |
| CPP-10 | 483,963 | | 0.00 | 5.8 | 2.81 | | 0.00 | 0.43 | 0.21 |
| CPP-11 | 1,709,927 | 5.5 | 9.40 | 5.5 | 9.40 | 1.3 | 2.22 | 1.3 | 2.22 |
| CPP-13 | 4,612,558 | 7.8 | 35.98 | 7.8 | 35.98 | 0 | 0.00 | 0 | 0.00 |
| CPP-14 | 12,667,906 | 7.1 | 89.94 | 7.1 | 89.94 | 0.24 | 3.04 | 0.24 | 3.04 |
| CPP-19 | 4,335,025 | 8.1 | 35.11 | 8.1 | 35.11 | 0.69 | 2.99 | 0.69 | 2.99 |
| CPP-34 | 31,368,149 | 6 | 188.21 | 6 | 188.21 | | 0.00 | 0.43 | 13.49 |
| CPP-35 | 356,665 | | 0.00 | 5.8 | 2.07 | | 0.00 | 0.43 | 0.15 |
| CPP-36/91 | 14,358,337 | 7.4 | 106.25 | 7.4 | 106.25 | 1.8 | 25.85 | 1.8 | 25.85 |
| CPP-37A | 12,487,487 | 6.8 | 84.91 | 6.8 | 84.91 | | 0.00 | 0.43 | 5.37 |
| CPP-37B | 117,479,968 | 6 | 704.88 | 6 | 704.88 | | 0.00 | 0.43 | 50.52 |
| CPP-44 | 102,068 | 7.1 | 0.72 | 7.1 | 0.72 | 0.47 | 0.05 | 0.47 | 0.05 |
| CPP-48 | 339,462 | 4 | 1.36 | 4 | 1.36 | | 0.00 | 0.43 | 0.15 |
| CPP-55 | 424,328 | | 0.00 | 5.8 | 2.46 | | 0.00 | 0.43 | 0.18 |
| CPP-67 | 113,834,544 | 6.4 | 728.54 | 6.4 | 728.54 | 0.21 | 23.91 | 0.21 | 23.91 |
| CPP-69 | 69,957 | 5.5 | 0.38 | 5.5 | 0.38 | 1.3 | 0.09 | 1.3 | 0.09 |
| CPP-92 | 1,571,160 | 4.7 | 7.38 | 4.7 | 7.38 | | 0.00 | 0.43 | 0.68 |
| CPP-93 | 3,058,601 | | 0.00 | 5.8 | 17.74 | | 0.00 | 0.43 | 1.32 |
| CPP-97 | 1,720,248 | 4.7 | 8.09 | 4.7 | 8.09 | 0 | 0.00 | 0 | 0.00 |
| CPP-98 | 286,708 | 4.7 | 1.35 | 4.7 | 1.35 | 0 | 0.00 | 0 | 0.00 |
| CPP-99 | 144,501 | 4.7 | 0.68 | 4.7 | 0.68 | 0 | 0.00 | 0 | 0.00 |
| TF CPP-28 IDW | 45,873 | 5 | 0.23 | 5 | 0.23 | | 0.00 | 0.43 | 0.02 |
| TF CPP-31 IDW | 45,873 | 5 | 0.23 | 5 | 0.23 | | 0.00 | 0.43 | 0.02 |
| TSF-03 | 1,231,968 | 5 | 6.16 | 5 | 6.16 | 0.79 | 0.97 | 0.79 | 0.97 |
| TSF-06 | 9,382,233 | 11 | 103.20 | 11 | 103.20 | 0 | 0.00 | 0 | 0.00 |
| TSF-07 | 1,491 | 49 | 0.07 | 49 | 0.07 | 84 | 0.13 | 84 | 0.13 |
| TSF-09/18 | 5,005,922 | 5 | 25.03 | 5 | 25.03 | 0.79 | 3.95 | 0.79 | 3.95 |
| TSF-26 | 11,716,036 | 11 | 128.88 | 11 | 128.88 | 0 | 0.00 | 0 | 0.00 |
| WRRTF-01 | 23,016,918 | 5 | 115.08 | 5 | 115.08 | 0.79 | 18.18 | 0.79 | 18.18 |
| Sum | 473,733,301 | | 2,687 | | 3,159 | | 175 | | 281 |

Blue highlighted fields are where background concentrations were entered when data was not present.

| | | | |
|--|------|---|------|
| Arsenic Design conc. used previously | 5.67 | Arsenic Design conc. assuming background when data not reported | 6.67 |
| Arsenic background concentration = 5.8 mg/kg | | | |

| | | | |
|--|------|--|------|
| Thallium Design conc. used previously | 0.37 | Thallium Design conc. assuming background when data not reported | 0.59 |
| Thallium background concentration = 0.43 mg/kg | | | |

WAC guideline set at 10 x background if Design inventory less than background, 1000 x design inventory if greater than background